

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
6 May 2004 (06.05.2004)

PCT

(10) International Publication Number
WO 2004/038431 A3

(51) International Patent Classification⁷: **G01V 3/00**

(21) International Application Number:
PCT/US2003/033933

(22) International Filing Date: 24 October 2003 (24.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/420,913 24 October 2002 (24.10.2002) US

(71) Applicant (for all designated States except US): **THE UNIVERSITY OF HOUSTON SYSTEM** [US/US];
4800 Calhoun Street, Ezekel Cullen Bldg., Rm 316,
Houston, TX 77204-2163 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **WOSIK, Jaroslaw**
[PL/US]; 2807 Conway, Houston, TX 77025 (US).
NESTERUK, Krzysztof [PL/PL] (PL). **XIE, Leiming,**
P. [US/US]; 6310 Rampart Street, APT 30, Houston, TX
77081 (US).

(74) Agent: **STROZIER, Robert, W.**; P.O. Box 429, Bellaire,
TX 77402-0429 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

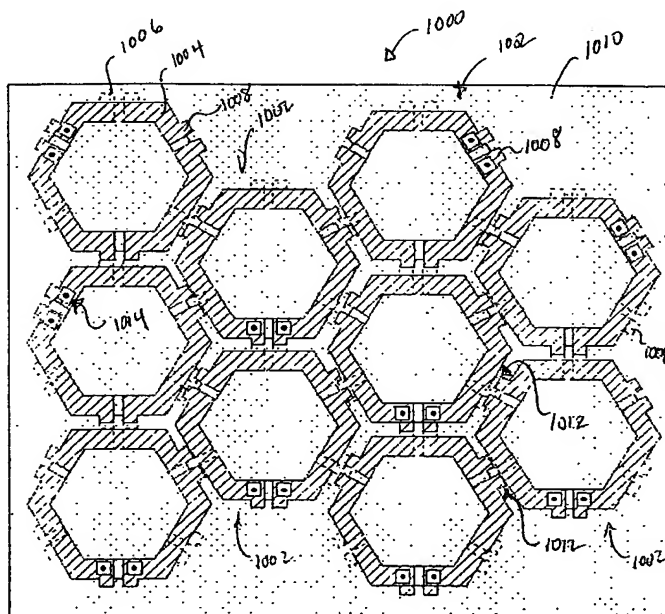
Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
30 September 2004

[Continued on next page]

(54) Title: **SUPERCONDUCTING ARRAY OF SURFACE MRI PROBES**



(57) Abstract: An array of resonators for use in MRI and NMR is disclosed where the resonators are solid state constructs including a pair of resonating elements formed on both sides of a dielectric substrate and cooperate to form a resonator and where each resonator includes at least one discontinuity and the discontinuities on each resonating element are equally spaced and between the resonating elements are equally spaced. A probe for MRI is also disclosed which includes a source of cooling to cool the arrays therein.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/33933

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G01V 3/00

US CL : 324/322

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 324/322

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	US 6,633,161 B1 (VAUGHAN, JR.) 14 October 2003 (14.10.2003), see entire document.	1-25
A	US 6,252,403 B1 (ALSOP) 26 June 2001 (26.06.2001), see entire document.	1-25
A	US 6,177,797 B1 (SRINIVASAN) 23 January 2001 (23.01.2001), see entire document.	1-25



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

22 April 2004 (22.04.2004)

Date of mailing of the international search report

29 JUL 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US

Commissioner for Patents

P.O. Box 1450

Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Donald Lair

Telephone No. (571) 272-2800

R. R. R.